

## CLAIMS

1. Switched-mode power supply with a primary side and a secondary side and with  
  
a transformer with a primary-side winding, a secondary-side winding and at least one auxiliary winding, wherein the primary-side winding and the auxiliary winding are connected to the primary side and the secondary-side winding is connected to the secondary side,  
  
a primary-side switch, which is connected to the primary-side winding in order to interrupt a flow of current through the primary-side winding,  
  
a freely oscillating control circuit for the generation of switching pulses for controlling the primary-side switch,  
  
a circuit for generating an image voltage between the terminals of the auxiliary winding, in order to generate an image voltage, which on the primary side replicates a voltage to be controlled on the secondary side,  
  
wherein the switched-mode power supply further comprises a time control unit, which is coupled to the primary-side switch such that the duration of a turn-off period of the primary-side switch can be adjusted within a switching cycle.
2. Switched-mode power supply according to claim 1, wherein the time control unit comprises a control capacitor, and that the turn-off time of the turn-off time of the primary-side switch can be adjusted by the charging current of said control capacitor.
3. Switched-mode power supply according to claim 1, wherein the time control unit comprises a diode, which is arranged between the primary-side switch and an input terminal of the switched-mode power supply such that the charging current of the control capacitor can be limited during the turn-off time of the primary-side

switch.

4. Switched-mode power supply according to claim 1, wherein the charging current of the control capacitor can be controlled by a charge-current control circuit, which is arranged between the input terminal of the switched-mode power supply and a control terminal of the primary-side switch.
5. Switched-mode power supply according to claim 4, wherein the charge-current control circuit comprises two amplifiers, which are connected in series.
6. Switched-mode power supply according to claim 1, wherein an oscillation suppression circuit is connected to the auxiliary winding such that unwanted oscillations in the control circuit of the primary-side switch are suppressed.
7. Switched-mode power supply according to claim 1, wherein a phase-shift circuit is provided for the phase-shifted turn-off of the primary-side switch.
8. Switched-mode power supply according to claim 1, wherein the time control unit is adapted to deactivate a control signal during a turn-on period of the primary-side switch.
9. Switched-mode power supply according to claim 1, comprising two primary-side auxiliary windings.
10. Switched-mode power supply according to claim 9, wherein one of the auxiliary windings is connected to the primary-side switch via a resistor, a diode and a transistor.
11. Switched-mode power supply according to claim 10, wherein one of the auxiliary windings is connected via a second diode to a capacitor such that it can be charged to the voltage to be controlled on the secondary side and that, in dependence of the voltage present at the capacitor, a current flows through the

diode, resistor, a third diode and the base-emitter junction of the transistor, which delays the turn-on of the primary-side switch due to the turn-on duration of the transistor.

12. Switched-mode power supply according to claim 8, wherein the control circuit comprises an overvoltage protection circuit.
13. Switched-mode power supply according to claim 4, wherein the charge-current control circuit further comprises a first Zener diode, which is connected via a resistor to the base of a control transistor such that the turn-on duration of the control transistor delays the turn-on of the primary-side switch.
14. Switched-mode power supply according to claim 13, wherein the charge-current control circuit furthermore comprises a second Zener diode, which is connected in parallel to the series circuit of the base-emitter junction of the primary-side switch and a resistor connected to the emitter of the primary-side switch.
15. Switched-mode power supply according to claim 1, further comprising a temperature compensation circuit for compensating the temperature of the switching threshold of the primary-side switch.
16. Switched-mode power supply according to one of the claims 1 to 15, further comprising an optocoupler for feeding back a secondary-side voltage to the primary circuit.
17. Switched-mode power supply according to claim 16, wherein the optocoupler is connected such that with the optocoupler in a blocking state a minimum power can be transferred and in the conducting state a maximum power can be transferred.
18. Method for controlling of the output voltage of a switched-mode power supply by using an optocoupler for the feedback of a secondary-side voltage, which is to be controlled, into the primary circuit,

whereby the optocoupler is controlled such that it conducts when a specified limit of the secondary-side voltage to be controlled is undercut.

19. Method according to claim 18, wherein an output current is controlled by adjusting a switching frequency dependent on the output voltage, which is transferred by an auxiliary winding.